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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,480	04/19/2001	Hiromichi Nakata	10517/94	7265

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KENYON & KENYON
1500 K STREET, N.W., SUITE 700
WASHINGTON, DC 20005

EXAMINER	
DOVE, TRACY MAE	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/837,480	NAKATA ET AL.	
	Examiner	Art Unit	
	Tracy Dove	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-14,16-26 and 43-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,13,14,16,25,26,43 and 45* is/are rejected.

7)☒ Claim(s) *5-12,17-24,44 and 46* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/19/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the communication filed on 2/17/05. Applicant's arguments have been considered, but are not persuasive. Claims 1, 2, 4-14, 16-26 and 43-46 are pending. Claims 3, 15 and 27-42 are canceled.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 11/19/04 has been considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 13, 14, 16, 25, 26, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over, Hwang et al., US 6,090,228 in view of Cullity, Elements of X-ray Diffraction, 2nd edition.

Hwang teaches an anticorrosive treatment method for a separator of a fuel cell. Conventional anticorrosive treatment methods for the separator include a molten metal (aluminum) coating. Hwang teaches nickel (underlying coating layer) and aluminum are coated in turn on a base material of stainless steel. See abstract. The separator provides entry and exits of reaction gases (fluid flow paths) and an electric current path (col. 1, lines 37-38). The separator contacts an electrode of the fuel cell (Fig. 1). It is well known to coat the separator with aluminum by dipping a base material into molten aluminum (col. 1, lines 58-63).

Hwang does not explicitly teach the metal coating layer comprises crystal grains having an average grain size of 0.1mm or more.

However, Cullity teaches the size of the crystal grains in a crystalline metal or alloy has pronounced effects on many of the metal or metal alloy properties (strength, hardness). The dependence of properties on grain size makes the measurement of grain size a matter of some importance in the control of most metal forming operations. The grain sizes encountered in commercial metals and alloys range from about 1000 to 1 μm (bottom of page 281-top of page 282).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill in the art would have known that the metal layer of Hwang would have had a grain size of 1000-1 μm because this is a typical grain size encountered in commercial metals and metal alloys. Furthermore, the instant specification states the large crystal grain size of the metal layer of the present invention results from a melting process (page 21). The metal layer of Hwang is molten (melted). Thus, Hwang at least suggests that the metal plating layer has an average grain size of 0.1 mm or more.

Hwang does not explicitly state the metal plating layer is subjected to melting and gradual cooling. However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. In re Fessman. Hwang teaches a molten metal. Note claims 42 and 45 also contain product-by-process limitations.

Response to Arguments

Applicant's arguments filed 2/17/05 have been fully considered but they are not persuasive.

The 35 U.S.C. 103(a) rejection in view of Kaneko et al., US 6,383,678, has been withdrawn because Kaneko is not available as prior art under 35 U.S.C. 103 against the claimed invention.

Applicant argues Cullity shows no recognition of the problem faced by the present inventors and contains no mention of a coating layer on a surface of a separator base material as required by the claimed invention. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Hwang teaches a coating layer on a surface of a separator base material.

Hwang teaches the claimed invention, but is silent regarding the average grain size of the metal coating. Cullity is applied as a teaching of typical average grain sizes for commercial metals and metal alloys. Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill in the art would have known that the metal layer of Hwang would have had a grain size of 1000-1 μm because this is a typical grain size encountered in commercial metals and metal alloys. Furthermore, the instant specification states the large crystal grain size of the metal layer of the present invention results from a melting process (page 21). The metal layer of Hwang is molten (melted). Thus, Hwang at least suggests that the metal plating layer has an average grain size of 0.1 mm or more.

Applicant has not addressed the motivational statement provided by the Examiner. Thus, there is nothing further for the Examiner to rebut.

Allowable Subject Matter

Claims 5-12, 17-24, 44 and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the claims are directed toward a fuel cell separator having a base material. The base material has a metal coating layer comprising crystal grains having an average grain size of 0.1 mm or more. The separator further includes an underlying coating layer formed between the metal coating layer and the base material wherein the underlying coating layer has an alloy-plating layer formed thereon. The layers of the claimed separator are as follows (in this order): base material layer, underlying coating layer, alloy-plating layer and metal coating layer comprising crystal grains having an average grain size of 0.1 mm or more.

The prior art does not teach a fuel cell separator having a base material with a metal coating layer formed thereon wherein the separator further includes an underlying coating layer formed between the metal coating layer and the base material and an alloy plating layer formed on the underlying coating layer.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 5, 2005

TRACY DOVE
PRIMARY EXAMINER